



REMARKS

Claim Rejections – 35 U.S.C. §102(b)

The Examiner has rejected base Claim 1 and Claim 7 under 35 U.S.C 102 (b) as being anticipated by Yoshii. It is Applicants' understanding that Yoshii fails to teach or reduce to practice the invention specified in Claim 1 and Claim 7.

Claims 1-2, and 4-6 claim a method for controlling a photoresist layer above a substrate. This method includes forming, exposing, and developing a photoresist layer to form at least one opening having a first dimension. Next, the photoresist layer with an opening is exposed to a solvent, such that the solvent causes a mitigation of bulk expansion of the photoresist layer during reflow. Then the photoresist layer is heated to achieve a thermal reflow to modify the dimensions of the photoresist layer. That is, Applicants' claim a method for controlling a photoresist layer by exposing a photoresist layer to a solvent to mitigate the bulk expansion of the photoresist during thermal reflow.

It is Applicants' understanding that Yoshii fails to disclose a method for controlling a photoresist layer by exposing the photoresist layer to a solvent to mitigate the bulk expansion of the photoresist during thermal reflow. Yoshii does disclose a method for controlling a photoresist layer but does not disclose mitigating the bulk expansion of the photoresist during thermal reflow. Instead, Yoshii discloses *desorbing* a protective group from a photoresist to cause the photoresist to become susceptible for swelling during heating. Yoshii further discloses that swelling the photoresist will reduce the openings in their dimension beyond the design rule of the photoresist film. It is Applicants' understanding that *desorbing* a protective group from a photoresist to reduce the dimension of opening in a photoresist is not equivalent to a method of controlling a photoresist by mitigating the bulk expansion of the photoresist during thermal reflow. Furthermore, Applicants' disclose a solvent which is infused in a photoresist which lowers the molecular weight of the resist material. As such, it is Applicants' understanding that Yoshii fails to teach Applicants' invention claimed in claims 1-2, and 4-6.

Additionally, with respect to claims 7-25, Applicants' claims *a method for controlling a photoresist layer by exposing the photoresist layer to a solvent to decrease the bulk expansion of the photoresist during reflow*. As such, it is Applicants' request that claims 7-25 are allowable over Yoshii for at least the reasons set forth in claim 1.

Claim Rejections – 35 U.S.C. §103(a)

With respect to claims 26-31, Applicants' claim a process of forming a substrate having an etched feature. This process includes forming, exposing, and developing a photoresist layer to form at least one opening having a first dimension. Next, the photoresist layer with an opening is exposed to a solvent, such that the solvent causes a mitigation of bulk expansion of the photoresist layer during reflow. Then the photoresist layer is heated to achieve a thermal reflow to modify the dimensions of the photoresist layer. Next, the photoresist layer is subjected to an etch process, subsequently forming an integrated circuit feature. That is, Applicants' claim a process of forming a substrate having an etched feature by exposing a photoresist layer to a solvent to mitigate the bulk expansion of the photoresist during thermal reflow and subjecting the photoresist layer to an etch process, subsequently forming an integrated circuit feature.

It is Applicants' understanding that Yoshii discloses a method for controlling a photoresist layer but does not disclose mitigating the bulk expansion of the photoresist during thermal reflow. Also, Yoshii discloses *desorbing* a protective group from a photoresist to cause the photoresist to become susceptible for swelling during heating. Yoshii further discloses that swelling the photoresist will reduce the openings in their dimension beyond the design rule of the photoresist film. Therefore, it is Applicants' understanding that Yoshii does not teach a method of controlling a photoresist layer by exposing the photoresist layer to a solvent to decrease the bulk expansion of the photoresist during thermal reflow.

Additionally, it is Applicants' understanding that Choi fails to disclose a method for controlling a photoresist layer by exposing the photoresist layer to a solvent to decrease the bulk expansion of the photoresist during thermal reflow. It is Applicants' understanding that Choi teaches adding a cross-linking agent to the photoresist layer and subsequently heating the photoresist layer to a temperature equal to or higher than the glass transition temperature. Furthermore, upon heating the photoresist layer, both partial cross-linking and thermal flow of the photoresist layer allows greater control of the flow of the photoresist layer and minimizes the distortion of the side wall profile. As such, it is Applicants' understanding that Choi also fails to teach a method for controlling a photoresist layer by exposing the photoresist layer to a solvent to decrease the bulk expansion of the photoresist layer during reflow as claimed in claims 26-31. Because neither Yoshii nor Choi teaches a method for controlling a photoresist layer by exposing the photoresist layer to a solvent to decrease the bulk expansion of the photoresist during thermal reflow the combination also fails to teach Applicants' invention claimed in claims 26-31.



**PETITION FOR EXTENSION OF TIME
PURSUANT TO 37 C.F.R. § 1.136 (a)**

Applicant respectfully petitions pursuant to 37 CFR 1.136(a) for a one-month extension of time to file this response to the Office Action mailed March 29, 2005. The extended period is set to expire on July 29, 2005. A check in the amount of \$120.00 is enclosed to cover the fee for a one-month extension of time.

Pursuant to 37 C.F.R. 1.136(a)(3), applicant(s) hereby request and authorize the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN

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